Title: A comparative study of artificial neural network and adaptive neurofuzzy inference system for prediction of compressional wave velocity

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Abstract: In this study, two solutions for prediction of compressional wave velocity (p wave) are presented and compared: artificial neural network (ANN) and adaptive neurofuzzy inference system (ANFIS). Series of analyses were performed to determine the optimum architecture of utilized methods using the trial and error process. Several ANNs and ANFISs are constructed, trained and validated to predict p wave in the investigated carbonate reservoir. A comparative study on prediction of p wave by ANN and ANFIS is addressed, and the quality of the target prediction was quantified in terms of the mean-squared errors (MSEs), correlation coefficient (R (2)) and prediction efficiency error. ANFIS with MSE of 0.0552 and R (2) of 0.9647, and ANN with MSE of 0.042 and R (2) of 0.976, showed better performance in comparison with MLR methods. ANN and ANFIS systems have performed comparably well and accurate for prediction of p wave.